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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/630,407	08/01/2000	Takanobu Noguchi	Q60265	5925

7590 12/22/2003

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EXAMINER

YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 12/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/630,407

Applicant(s)

NOGUCHI ET AL.

Examiner

Marie R. Yamnitzky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2 and 4-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 4-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicants' amendment filed on October 14, 2003 (Paper No. 16), which amends claims 1, 2 and 4-6 and cancels claim 3, has been entered. Claims 1, 2 and 4-14 are pending.

2. In Paper No. 16, the status identifiers utilized for claims 8-14 are not in compliance with 37 CFR 1.121 (effective date: July 30, 2003). The examiner has changed each occurrence of the status identifier "Previously Amended" in Paper No. 16 to --Previously Presented--.

3. Claims 1, 2 and 4-14 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the specific polymers set forth in the examples and for EL devices comprising these specific polymers and articles incorporating such EL devices, does not reasonably provide enablement for the full scope of polymers, EL devices and articles incorporating EL devices encompassed by the present claims. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims.

The repeating units required by the present claims encompass thousands of different possibilities. The claims require a copolymer containing at least two different repeating units (in the case of claim 1 and dependents) or at least three different repeating units (in the case of claim

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2 and dependents) wherein some of the different repeating units are selected based upon the absorption edge wavelengths of the polymers made solely of the individual repeating units.

The specification sets forth ten examples of specific copolymers containing two different repeating units. Of the ten specific copolymers, nine consist of repeating units within the scope of the repeating units required by present claim 1. None of the examples utilize three different repeating units as required by claim 2.

Other than the specific combinations of repeating units used for the copolymers of the examples, the specification does not provide any guidance as to what possible combinations of repeating units selected from the myriad of possibilities within the scope of the formulae set forth in the claims can reasonably be expected to meet condition (c) as set forth in claim 1 or condition (f) as set forth in claim 2. The specification does not contain any general guidance as to how different arylene groups, heterocyclic compounds and substituents affect the absorption edge wavelength of a polymer such that one of skill in the art could reasonably predict the absorption edge wavelength of a polymer of a specific repeating unit relative to a polymer of a different specific repeating unit.

It is the examiner's position that the specification does not enable any person skilled in the art to make and use the invention commensurate in scope with the claims because one of skill in the art would have to make the polymers of various individual repeating units within the scope of the claims and then determine the absorption edge wavelength of each of the polymers in order to determine which combinations of repeating units meet the limitations of the claims. Given the thousands of different repeating units within the scope of the formulae set forth in the

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claims, it is the examiner's position that undue experimentation would be required on the part of one of skill in the art to make and use the invention commensurate in scope with the claims.

4. Claims 2 and 5-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5-14 are included in this rejection as dependent from claim 2.

Formula (5) as set forth in claim 2 is incomplete because it does not contain "j" although "j" is defined as an integer from 0 to 3.

5. Applicants' arguments filed October 14, 2003 have been fully considered but they are not persuasive with respect to the rejection under 35 U.S.C. 112, first paragraph.

Applicants have previously argued that the absorption edge wavelength and fluorescence peak wavelength of a copolymer can be used in order to determine the absorption edge wavelength of a homopolymer of each of the monomer units making up the copolymer.

As previously noted by the examiner, the fluorescence peak of the copolymer for which data are provided in Table 1 on page 66 of the specification is not the same as the absorption edge wavelength of the homopolymer of units of formula (3). It is also not clear from this one copolymer example whether the absorption edge wavelength of the copolymer will always be the same as the absorption edge wavelength of the homopolymer of units of formula (1). Condition (c) as set forth in claim 1 sets forth a relation between absorption edge wavelengths of two

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homopolymers that must be met. It is not clear that using values that are approximations of absorption edge wavelengths of homopolymers will necessarily result in an accurate determination as to whether a particular copolymer meets the claim limitations of condition (c).

In Paper No. 16, applicants provide excerpts from WO 92/03490 and US 5,543,079 as showing that “the technique for evaluating local HOMO, LUMO and bandgap of the homopolymers of each of the repeating units that constitute the copolymer” is well known. The examiner has reviewed the excerpts from WO 92/03490 and US 5,543,079 provided by applicants. The provided excerpts do not discuss using the absorption edge wavelength and fluorescence peak wavelength of a copolymer in order to determine the absorption edge wavelength of a homopolymer of each of the monomer units making up the copolymer. The excerpts do not disclose a method for determining the absorption edge wavelengths of homopolymers of the different repeating units of a copolymer without making each of the homopolymers.

In Paper No. 16, applicants also argue that “in a copolymer, the difference between fluorescent peak and absorption edge wavelength generally becomes smaller than the values estimated from the respective homopolymers, but in the case where condition (c) is satisfied by using these values, condition (c) must also be satisfied in the homopolymer.” Even if this is the case, there is still a reasonable possibility that applicants’ argued method of using the fluorescent peak and absorption edge wavelengths of a copolymer in order to estimate the absorption edge wavelengths of the homopolymers will sometimes result in an incorrect determination as to

whether condition (c) is met, and thus result in an incorrect determination as to whether a particular copolymer is within the scope of the present claims.

Even if using the absorption edge wavelength and fluorescent peak wavelength of a polymeric fluorescent substance consisting of repeating units of formulae (1) and (3) can be used to accurately determine whether the absorption peak wavelength of a polymer consisting of units of formula (1) and the absorption peak wavelength of a polymer consisting of units of formula (3) meet the relation set forth in (c) in claim 1, it is not clear how the absorption edge wavelength and fluorescent peak wavelength of a polymeric fluorescent substance comprising three repeating units as required by claim 2 can be used to determine whether the absorption edge wavelengths of three homopolymers meet the relation set forth in (f) in claim 2. At best, it appears that one could estimate the absorption edge wavelengths for only two of the three homopolymers: the homopolymer with the longest absorption edge wavelength and the homopolymer with the shortest absorption edge wavelength.

In Paper No. 16, applicants argue that the relationship between repeating units represented by formulae (4) and (3) as required by (f) is similar to the relationship between the repeating units represented by formulae (1) and (3). The fact that the relationship is similar does not clarify how one can utilize the absorption edge wavelength and fluorescent peak wavelength of a polymeric fluorescent substance comprising three (or more) repeating units to determine the absorption edge wavelengths of three homopolymers.

Further, although polymeric fluorescent substance 4, which is prepared according to Example 2 in the specification, is no longer within the scope of present claim 1 and dependents

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since 1 of formula (3) no longer is allowed to equal zero, this copolymer raises doubts that applicants' argued method for determining whether condition (c) is met is always accurate. Using applicants' argued method for determining whether condition (c) is met, polymeric fluorescent substance 4 does not meet condition (c) although the application as originally filed implies that this polymer does meet condition (c).

6. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (703) 308-4413. (On or about December 30, 2003, the examiner's telephone number will be changed to (571) 272-1531.) The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for Art Unit 1774 is (703) 872-9306 for all official faxes. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (703) 872-9041. On or about December 30, 2003, the examiner's fax number for unofficial faxes will be changed to (571) 273-1531.)

MRY
December 18, 2003



MARIE YAMNITZKY
PRIMARY EXAMINER

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